Visualization-method selection according to task and system characteristics for HMD-based AR task-support

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内 容 梗 概（1ページ目に収めること）

An Augmented Reality (AR) task-support using head-mounted displays (HMDs) improves human performance in maintenance, assembly, and disassembly tasks by intuitively showing the working procedure to the operator. However, to achieve the intended AR capability and to improve working efficiency, the application designer must fully understand the characteristics of AR and then, design how to visualize the information (visualization method) for operators. On the other hand, we believe that the procedure manual writers in factories will design those AR task-support applications in the future. Therefore, it will be difficult for these people who usually do not have AR expertise to design AR applications. To solve this problem, I propose a method to assist them by filtering and outputting suitable visualization methods.

Firstly, I defined subtask-types with a certain granularity to compose general assembly tasks and defined tracking-types to classify the performance of AR hardware and software used. Then, I proposed a filtering method of possible visualization methods for the application by eliminating ones that cannot be used due to those types of the task and system. Secondly, I extended the subtask-types for maintenance, assembly, and disassembly tasks and I organized the many extant visualization methods in terms of task and system characteristics. Then, I proposed a filtering method of suitable visualization methods for more detailed task and system characteristics, such as working space, object, and HMDs. The evaluation of the proposed method resulted in the output of a small number of visualization method candidates, including at least of one which AR experts feel was suitable. Finally, I implemented the proposed method as a web tool and made it available to the public so that the target users can use it easily.